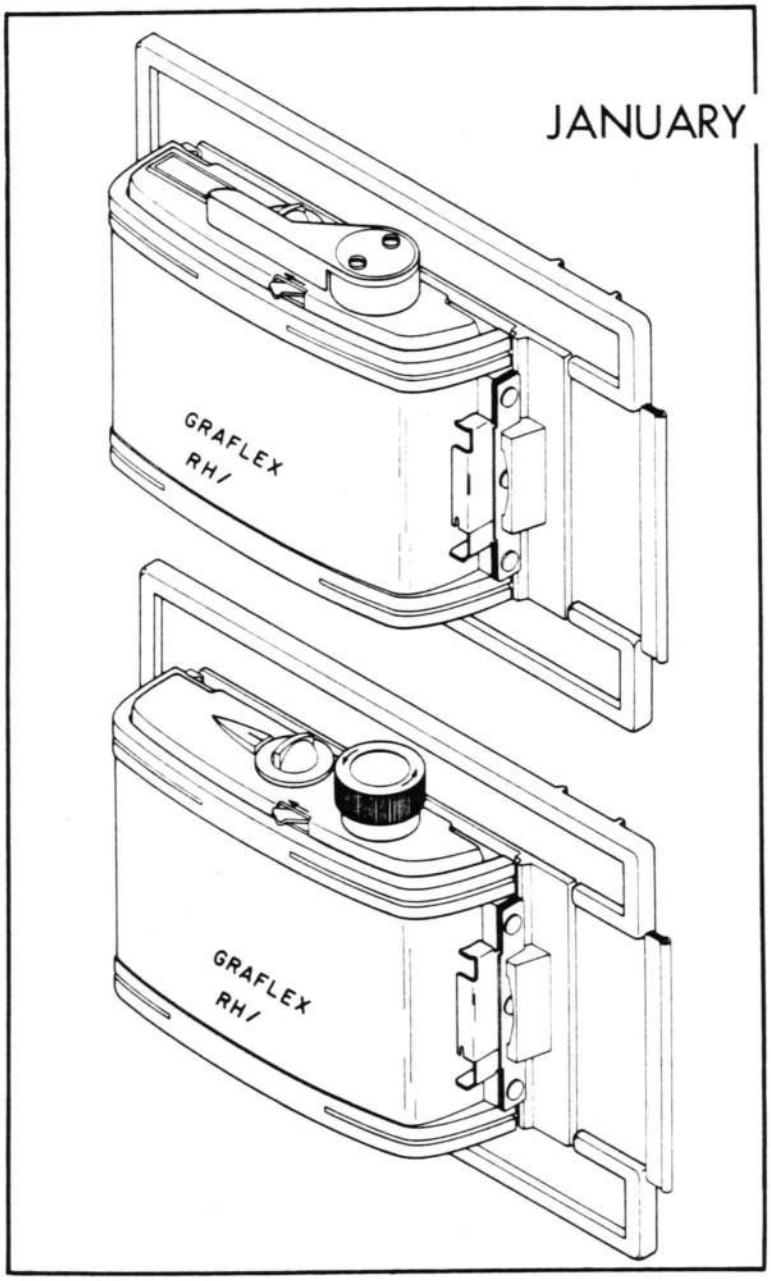
ROLL HOLDER, LEVER ADVANCE

ROLL HOLDER, KNOB ADVANCE



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A. Introduction

This manual provides service instructions for repair of the Graflex Lever and Knob Advance Roll Holders. Obvious procedures are not stated. The Parts List clearly describes the differences between models.

B. Disassembly - Carriage Complete

Refer to Figure 1 for disassembly of the carriage.

NOTE: The winding key (7), sun pinion (6) and winding knob (3a) have LEFT HAND THREADS, turn clockwise for disassembly. This is done by setting the dial on a number so the mechanism will lock. (Use reverse of assembly procedure 16.)

C. Cleaning and Lubrication

Before reassembly, clean all metal parts with chlorothene to remove old lubricants. Wipe plastic parts with a dry, lint-free cloth. For lubrication, refer to paragraph F.

D. Reassembly - Carriage Complete

Refer to Figure 1 for reassembly of Carriage.

1. Place carriage assembly (44) in an upright position, as shown.

2. Assemble washer (28) and ratchet (27) (rounded edge of teeth down) to pinion (29). Place pinion (29) into its opening and secure in place with washer (8) and key (7). Be sure that washer (8) is not caught between shoulder of pinion (29) and key (7). (NOTE: Washer (28) is used on Lever Advance Model only.)

3. Place washer (23) on bearing (22). Put bearing into its opening and tape in place. Put screw (12) into its opening and tape in place. (Tape applied over slotted head and secured to carriage will hold these items in position.)

4. Place gear (36) (rounded edge of teeth down) and pinion (26) into position.

5. Place gear (35) (rounded edge of teeth down) in position - open edge facing pinion (26).

6. Assemble spacer (34), lever (33), bearing (32), and spring (31). (Note position of long and short shanks.) Position on bearing (22).

7. Assemble spring (25) and lever (24). Be sure hook on spring engages lever. Position on pinion (26).

8. Place cam (30) in position shown. Be sure pins on cam engage proper holes in gear (35).

9. Thread spring (20) on stud of bearing plate (21 or 21a). Place bearing plate in position. Untape bearing (22), tighten down to secure plate.

10. Pull bottom shank of spring (20) counterclockwise until pawl is tight against ratchet (27) - continue pulling shank of spring until it is pointing in opposite direction of top shank. Maintain this pressure. Slide spacer (18) into position, apply pressure on bearing plate to retain spacer and release spring. Insert screw (19) and tighten. (NOTE - Do not allow pawl to slip above or below ratchet during this operation.) Visually check for bearing plate alignment. Cam (30) and ratchet (27) must be flat relative to the bearing plate. If not, loosen bearing (22), screw (19) and align mechanism before retightening.

11. Pull straight shank of spring (25) around and behind prong of bearing plate. (Use paper clip with small hook formed on one end.)

12. Engage short shank of spring (31) in hook on lever (33), then pull long shank of spring around and behind prong on bearing plate.

13. Place top plate (13 or 13a) in position. Remove tape from over head of screw (12), hold in position and assemble dial (11) - (RH Thread) until it almost touches lugs on cam. Position slots on underside of dial over lugs of cam such that the letter "S" on the dial is near the white index line. Push dial down to engage cam and tighten screw (12). Replace winding knob (3a) by turning it counterclockwise.

Steps 14 through 19 are for assembly of Lever Advance model only.

14. Place spring (10) around post of pinion (29) and lower loop or spring around brass stud on bearing plate. Push spring (attached to pawl) away from post of pinion (29) and slip spring (10) between post of pinion (29) and spring. Keep pawl on outside of springs.

15. Slide carrier assembly (9) over post of pinion (29) and center spring (10) directly beneath it. Place upper loop of spring around long stud on underside of carrier assembly. Push carrier assembly down and turn counterclockwise approximately 45° until long stud on underside of carrier assembly is behind pawl pivot. Hold in position.

16. Place sun pinion (6) on pinion (29) and turn counterclockwise until tight (LH Thread). Release carrier assembly. Tighten down firmly by carefully inserting a screwdriver blade in the teeth of sun pinion and apply slight pressure using a post of the carrier assembly as a fulcrum.

17. Place ring gear (5) down around outside of carrier assembly. Push pawl in toward pinion (29) and insert a thin object through screw hole in carrier assembly where pawl now appears. Put pressure on pawl to hold it in this position, then push ring gear down until it sets evenly on bearing plate. Hold ring gear down and release pawl.

18. Slide planet pinions (4) on posts of carrier assembly engaging teeth of sun pinion.

19. Place lever (3) in position with two flat sided holes engaging posts on carrier assembly and advance

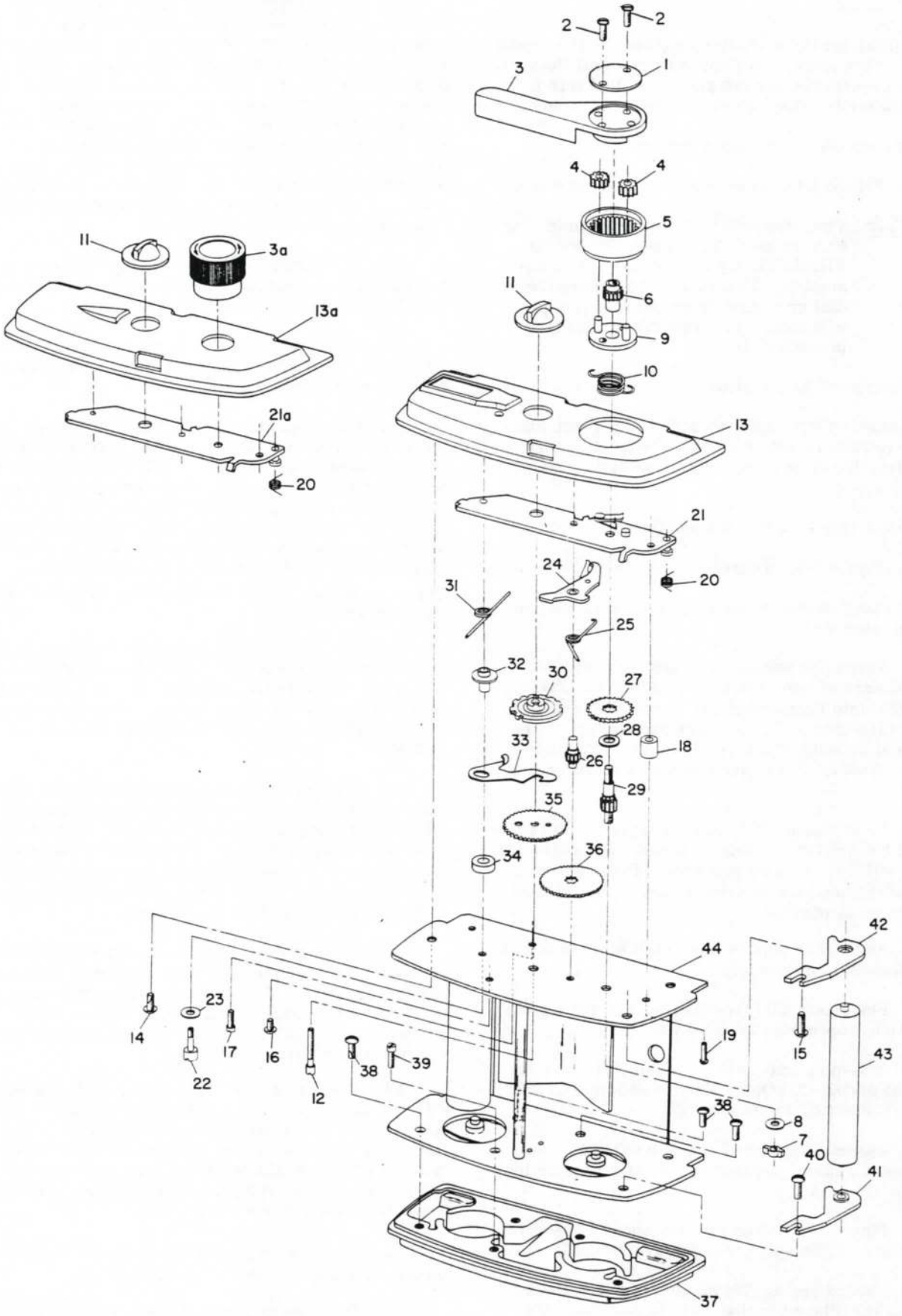

Figure 1. CARRIAGE COMPLETE

lever until it is in front of its stop pin. Then press down, directly over ring gear, until seated. Place lever cap (1) on lever and replace two screws (2).

20. Assemble roller (43) to upper and lower guides (42 and 41) with flanged edges of holes on guides in toward roller. Position in carriage assembly.

21. Lay entire assembly on a flat surface with loading side up and top plate facing left. (Large idler roller will be in toward repairman.) Hold body of carriage assembly steady and position take up end of top plate up (away from film plane) and back toward supply end. (This can be done by holding the assembly in the left hand with the thumb on the carriage assembly support bar and the middle finger under the corner of the top plate at the take up end. Pressure applied by these fingers will hold the top plate in its proper position.) Maintain position of top plate and insert screw (15) and tighten until it retains the upper guide in place. Insert screw (14) and tighten to approximately two turns loose. Release carriage, apply pressure to position supply end of top plate down (toward film plane) and tighten screw (14) completely. Reapply pressure to position front of top plate up, being sure upper guide is still in position, and tighten screw (15) completely. Replace screws (16) and (17).

22. Put bottom plate (37) in position and insert three screws (38) and screw (39).

23. Line up lower guide (41) and insert screw (40). Upper and lower guides must be flat against sides of carriage assembly (44), roller must be free wheeling.

24. Secure heads of screws (14), (15), (40), and feet of upper and lower guides on inside of carriage with one or two drops of Glyptol ZV-903 (General Electric).

E. Inspection and Troubles

Before disassembly, check for loose or missing screws and parts that are binding due to misalignment or lack of lubrication.

MODEL	TROUBLE	CAUSE	REMEDY
Both	Lock lever does not catch when released from locked position	Spring on lock lever assembly (24, fig. 1) broken	Replace lock lever assembly
Both	Metering mechanism binds or jams	Bearing plate assembly (21 or 21a, fig. 1) out of alignment	Realign plate assembly and mechanism components
Both	Negatives not sharp - one side or generally; and/or fogged streaks caused by light leaks	Screw (17, fig. 1) missing	Replace screw
		Back cover assembly is damaged	Replace back cover
		Light seal at end of cover damaged	Replace light seal, cement in place with EC-880 cement
		Slide damaged	Replace slide
Both	Pictures do not start at No. 1 (on film)	Spring (31, fig. 1) broken or unhooked	Rehook or replace spring
	Dial does not rotate at exposure start		
Both	Not full number of pictures per roll or in wrong position on roll	Lock lever assembly (24, fig. 1) bent or damaged	Replace lock lever
		Improper threading	See loading instructions
Both	At end of roll, dial moves back and forth between "12", "10", or "8" and "S"	Lock lever assembly binding	Lubricate plate assembly
Both	Film winds through without stopping on numbers	Spring (25, fig. 1) broken or unhooked	Rehook or replace spring
Both	Dial free-wheels at #1, #2, or #3 instead of #8, #10, or #12; numbers not in synchronization with film	Dial in wrong position in relation to cam	Rotate dial 180°

MODEL	TROUBLE	CAUSE	REMEDY
Both	Dial only partially locks at each number; slightly forcing film advance lever (or winding knob) will permit winding to succeeding exposures without stopping	Ratchet (27, fig. 1) reversed, rounded edge faces toward plate assembly	Reverse ratchet
Both	Winding key (and/or knob) turns freely in either direction	Spring (20, fig. 1) broken or unhooked	Rehook or replace spring
Both	Back cover does not fit correctly - may not close and latch	Top or bottom plate (13, 13a or 37, fig. 1) may be out of alignment with carriage	Realign plate
Lever	Film advance lever fails to return	Return spring (10, fig. 1) broken or unhooked	Rehook or replace spring
Lever	Film advance lever fails to advance film	Spring or pawl on bearing plate assembly (21, fig. 1) broken	Replace spring or plate assembly
Lever	Film advance lever binds before completing full swing	Top plate (13 or 13a, fig. 1) out of adjustment	Readjust plate
Both	Film scratch	Film flattener rollers not turning freely	Lubricate with dry molykote and alcohol

F. Lubricants, Cleaning Solvents, and Adhesives

COMPOUND	MANUFACTURER	USE OR APPLICATION
LUBRICANTS:		
Special mixture of (1 teaspoon) Alpha Molykote Type Z and (2 ounces) FS-1290 Fluorosilicone grease	Alpha Molykote Corp. Stamford, Conn. Dow Corning Corp. Midland, Mich.	All surfaces of carriage assembly (44) and bearing plate (21) in contact with rotating gears, cam, and ratchet: underside of cam (30) - lobe that engages lever (33); bearing diameters and teeth of pinions (26), (29), (4), and (6); teeth and all bearing surfaces of ring gear (5) that contact bearing plate (21); top plate (13) and lever (3); surfaces of ratchet (27) that touch bearing plate.
Neolube	Huron Industries, Huron Mich.	Bearing ends of roller (43)
CLEANING SOLVENTS:		
Cholorothene	Dow Corning Corp. Midland, Mich.	All metal parts
ADHESIVES:		
EC-880 adhesive	Minnesota Mining and Mfg. Co.	Light seal to cover assembly
Glyptol ZV-903 cement	General Electric	Heads of screws (14), (15), (40), feet of upper and lower guides on inside of carriage, bearing (22), and key (7)

ILLUSTRATED PARTS LIST

These Group Assembly Parts Lists are listed in disassembly order. The list divides the components into major assemblies, their subassemblies and parts. By the use of indented columns, the relationship of the assemblies to the subassemblies and parts is obtained.

The column titled "Figure and Index No." contains the index number in disassembly order of the items illustrated. DO NOT use the figure or index number in correspondence - specify the catalog or part number and name.

The column titled "Nomenclature" (including numbered columns) lists item nomenclature on the Graflex drawing. The assembly in the column marked "3" will be a component or the first assembly which preceded it in the column marked "2", etc. The code "NP" will indicate that this part is "not procurable" and that the "next higher assembly" (NHA) should be ordered. The code "AR" is used for bulk items when an indefinite amount may or may not be used "as required." The code "LP" is used when an item may be "locally purchased."

Code letters used in the Parts List are as follows:

L = Lever Advance Models

K = Knob Advance Models

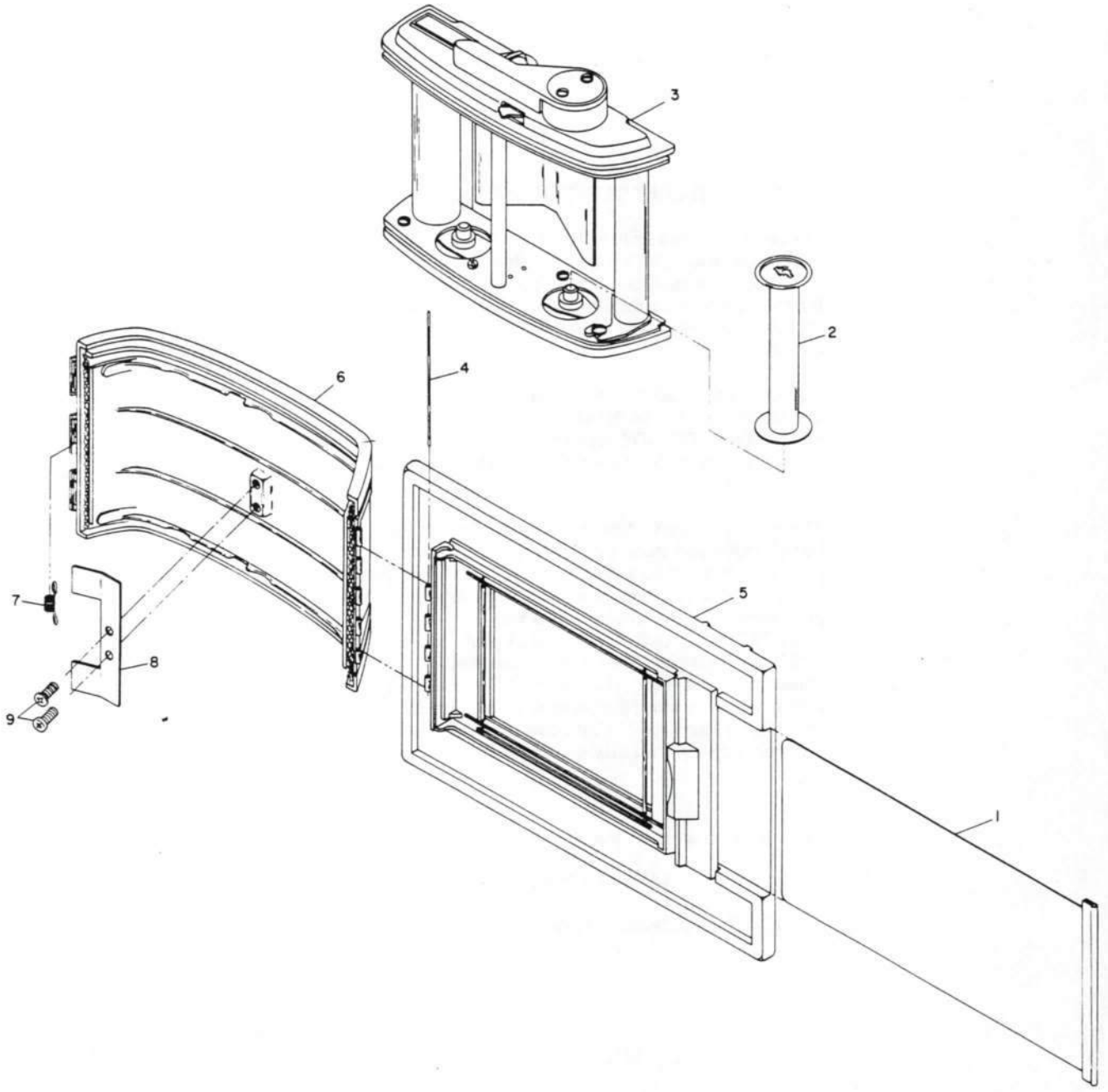

Figure 2. HOLDER COMPLETE - ROLL FILM

Figure and Index No.	Part Number	1 2 3 4 5 Nomenclature	Qty.	Code L	Code K
2-	39606G1	Holder Complete - Roll Film (8 Exposure - "23") Cat. No. 1252 . .	1	-	
	39606G2	Holder Complete - Roll Film (10 Exposure - "23") Cat. No. 1253. .	1	-	
	39606G3	Holder Complete - Roll Film (12 Exposure - "23") Cat. No. 1254. .	1	-	
	39606G4	Holder Complete - Roll Film (8 Exposure - "45") Cat. No. 1255 . .	1	-	
	39606G5	Holder Complete - Roll Film (10 Exposure - "45") Cat. No. 1256. .	1	-	
	39606G6	Holder Complete - Roll Film (12 Exposure - "45") Cat. No. 1257. .	1	-	
	31786G1	Holder Complete - Roll Film (8 Exposure - "23") Cat. No. 1242 - See Note 1.	Ref.		-
	31786G3	Holder Complete - Roll Film (12 Exposure - "23") Cat. No. 1249 - See Note 2.	Ref.		-
	31786G9	Holder Complete - Roll Film (8 Exposure - "45") Cat. No. 1244 - See Note 3.	Ref.		-
	31786G11	Holder Complete - Roll Film (12 Exposure - "45") Cat. No. 1251 - See Note 4.	Ref.		-
-1	30649G3	. Slide Complete ("23") Cat. No. 1432	1	-	-
	30649G5	. Slide Complete ("45") Cat. No. 1418	1	-	-
-2	31835	. Spool - Film Take-up	1	-	-
-3		. Carriage Complete (Figure 3)	Ref.		
-4	30172-30	. Pin - Straight	1	-	-
-5	31831G1	. Frame Assembly (8 Exposure - "23").	1	-	-
	31831G13	. Frame Assembly (10 Exposure - "23").	1	-	
	31831G3	. Frame Assembly (12 Exposure - "23").	1	-	-
	31831G9	. Frame Assembly (8 Exposure - "45").	1	-	-
	31831G14	. Frame Assembly (10 Exposure - "45").	1	-	
	31831G11	. Frame Assembly (12 Exposure - "45").	1	-	-
-6	31787G1	. Cover Assembly (8 Exposure).	1	-	-
	31787G5	. Cover Assembly (10 Exposure)	1	-	
	31787G3	. Cover Assembly (12 Exposure)	1	-	-
-7	33813	. . Spring - Latch	1	-	-
-8	31791	. . Spring - Film Pressure	1	-	-
	Attaching Part				
-9	30921-28L	. . Screw - Self Threading, No. 2 x 11/64, round hd	2	-	-
	---***---				
	31787P2	. . Seal - Light	AR	-	-
		. . Covering (8 Exposure)	NP	-	-
		. . Covering (10 Exposure)	NP	-	-
		. . Covering (12 Exposure)	NP	-	-
		. . Cover	NP	-	-

NOTE:
1. Replace with 39606G1
2. Replace with 39606G3
3. Replace with 39606G4
4. Replace with 39606G6

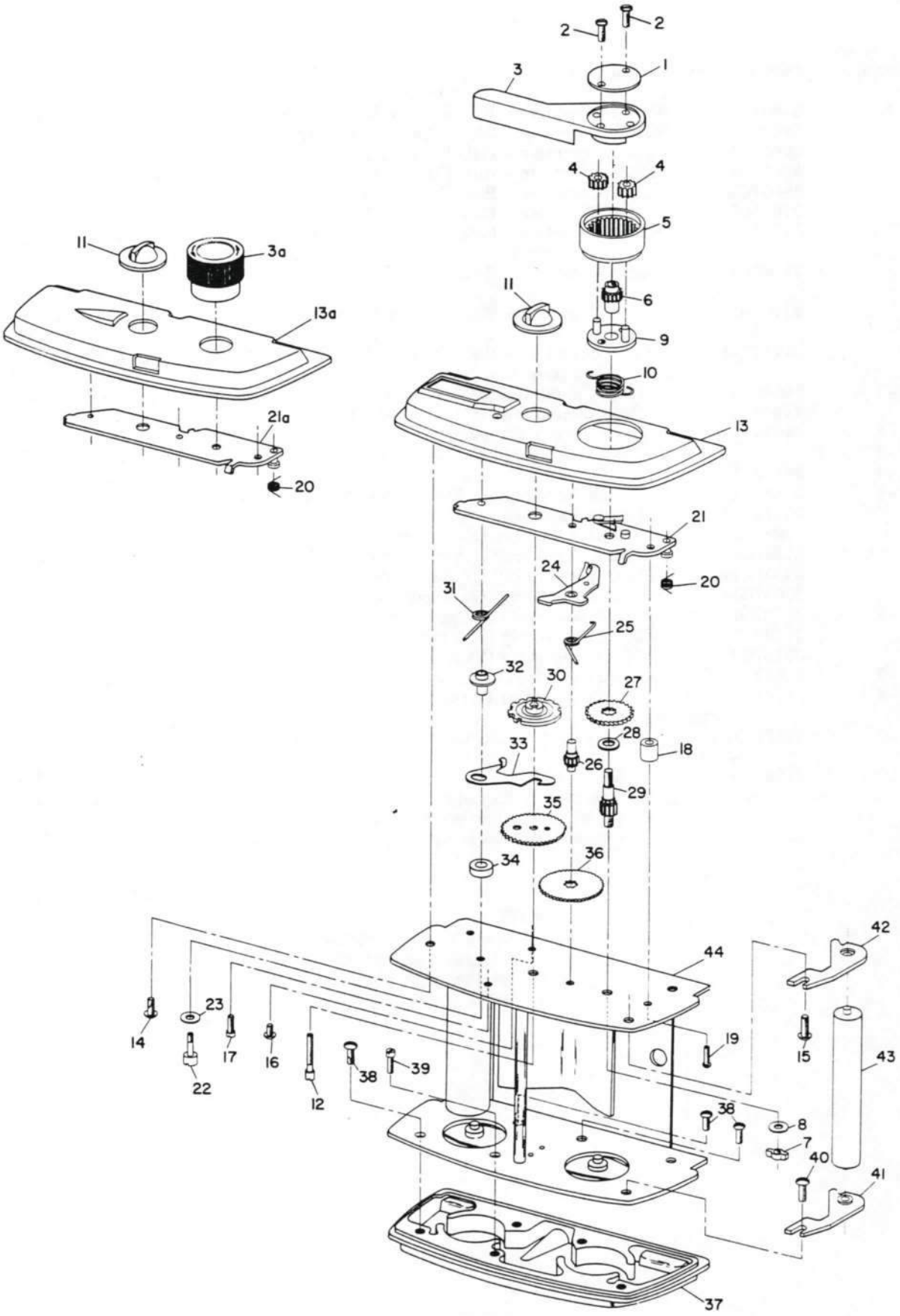

Figure 3. CARRIAGE COMPLETE

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	Code L	Code K
3-	31797G3		Carriage Complete (8 Exposure) - Cat. No. 1202	1	-	
	31797G4		Carriage Complete (10 Exposure) - Cat. No. 1203	1	-	
	31797G5		Carriage Complete (12 Exposure) - Cat. No. 1204	1	-	
	31797G1		Carriage Complete (8 Exposure) - Replace with 31797G3	Ref.		-
	31797G2		Carriage Complete (12 Exposure) - Replace with 31797G5	Ref.		-
-1	39613		· Cap - Lever	1	-	
			Attaching Part			
-2	39622		· Screw - Machine (Special)	2	-	
			---***---			
-3	39612P1		· Lever - Film Advance	1	-	
-3a	31829G1		· Knob - Film Winding	1		-
-4	39611P1		· Pinion - Planet	2	-	
-5	39610P1		· Gear - Ring	1	-	
-6	39609P1		· Pinion - Sun	1	-	
-7	31811P1		· Key - Winding Spool	1	-	-
-8	30473-41		· Washer - Flat, 0.312 x 0.128 x 0.010	1	-	-
-9	39614G1		· Carrier Assembly - Planet Gear	1	-	
-10	39608P1		· Spring - Film Advance Lever	1	-	
-11	31828P1		· Dial (8 Exposure)	1	-	-
	31828P3		· Dial (10 Exposure)	1	-	
	31828P2		· Dial (12 Exposure)	1	-	-
			Attaching Part			
-12	31834P2		· Screw - Machine (Special)	1	-	-
			---***---			
-13	39623G1		· Plate Assembly - Top	1	-	
	31888P2		· · Panel	1	-	
-13a	31827P1		· Plate - Top	1		-
			Attaching Part			
-14	33921-20L		· Screw - Self Threading, No. 4 x 19/64, round hd	1	-	-
-15	33921-23L		· Screw - Self Threading, No. 4 x 23/64, round hd	1	-	-
-16	33921-1L		· Screw - Self Threading, No. 3 x 11/64, pan hd	1	-	-
-17	33776		· Screw - Machine (Special)	1	-	-
			---***---			
-18	31809		· Spacer	1	-	-
			Attaching Part			
-19	102-2-6L		· Screw - Machine, No. 2-56 x 1/8, round hd	1	-	-
			---***---			
-20	39605		· Spring - Non Reverse Pawl	1	-	-
-21	31805G2		· Plate Assembly - Bearing	1	-	
	39620		· · Spring - Ring Gear Pawl	1	-	
-21a	31805G1		· Plate Assembly - Bearing	1		-
			Attaching Part			
-22	31826		· Bearing - Spool	1	-	-
-23	30473-41		· Washer - Flat, 0.312 x 0.128 x 0.010	1	-	-
			---***---			
-24	31817G1		· Lever Assembly - Lock	1	-	-
-25	31816P1		· Spring - Lock Lever	1	-	-
-26	31814P1		· Pinion - Intermediate	1	-	-
-27	31813P1		· Ratchet - Lock	1	-	-
-28	30473-14		· Washer - Flat, 0.312 x 0.219 x 0.009	1	-	
-29	39607P1		· Pinion - Film Advance	1	-	
	31810P1		· Pinion - Film Advance	1		-
-30	31820P1		· Cam (8 Exposure)	1	-	-
	31820P3		· Cam (10 Exposure)	1	-	
	31820P2		· Cam (12 Exposure)	1	-	-
-31	31825		· Spring - Engaging Lever	1	-	-
-32	31822		· Bearing - Engaging Lever	1	-	-
-33	31823P1		· Lever - Counter Engaging	1	-	-
-34	31824		· Spacer	1	-	-
-35	31821P1		· Gear - Counter	1	-	-
-36	31815P1		· Gear - Intermediate	1	-	-
-37	31804P1		· Plate - Bottom	1	-	-
			Attaching Parts			
-38	33921-20L		· Screw - Self Threading, No. 4 x 19/64, round hd	3	-	-

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	Code L	Code K
3-39	33776	·	Screw - Machine (Special)	1	-	-
-40	33921-23L	·	Screw - Self Threading, No. 4 x 23/64, round hd	1	-	-
		---***---				
-41	39603P1	·	Guide - Film (Lower)	1	-	-
-42	39603P2	·	Guide - Film (Upper)	1	-	-
-43	39604P1	·	Roller - Film	1	-	-
-44	31798G1	·	Carriage Assembly	1	-	-

SERVICE INFORMATION BULLETIN #6

(Insert with Section 76 - Roll Holder)

GRAFLEX, Inc.
Rochester 8, New York

20 August 1956

SUBJECT: 1. IDLER FILM GUIDES - ASSEMBLY OF:
2. IDLER REPLACEMENT.

REASON FOR CHANGE: 1. To keep film from running off edge of idler.
2. Improve idler bearing.

ACCOMPLISHMENT: 1. Add whenever roll holder is serviced.
2. When necessary to improve idler function.

DESCRIPTION OF CHANGE: 1. Minor - replace screw and add film guides, 2 required.
2. Disassemble complete; drill bearing holes larger.

PARTS REQUIRED OR CHANGED: (Make notations in Parts List, pages 10 and 11).

Figure and Index No.	Part Number	Nomenclature 1 2 3 4	Qty.	List Price
2-5	33921-P23	. . Screw-Self tapping, #4, 0.375 in. lg, round head required for film guide 33788, (Replaces 30921-P21).	2	.02
2-9	33921-P20	. . Screw-Self tapping, #4, 0.312 in. lg, round head (Replaces 30921-P21)	4	.02
Add 2-30A	33788	. . Guide-Film (Requires screw 33921-P23). .	2	.05
2-32	33947-P1	. . Roller, 0.621 in. dia, with 0.125 in. diam. bearing (Replaces 31803-P1 and 33906-P1)	2	.55

Obsolete the following:

2-5	30921-P21	. . Screw-Self tapping (Replaced by 33921-P23 above)
2-9	30921-P21	. . Screw-Self tapping (Replaced by 33921-P20 above)
2-32	*33906-P1	. . . Roller, 0.621 in. dia. (Requires pins 30685-P3)
2-34	*30685-P3	. . . Pin (for roller 33906-P1)

(On the two parts above, mark quantity NP (not procurable) and delete price.)

SPECIAL TOOL REQUIRED: None.

DISPOSITION OF PARTS REMOVED: SCRAP

MAN HOURS REQUIRED: 1. Approximately 1/4 hour.
2. Approximately 1/4 hour additional for normal replacement time.

1. FILM GUIDES. (Figure A)

1.1. Reports of difficulty in winding certain films through the Graflex Roll Holders have been the subject of considerable investigation. We believe that the cause can be attributed to the fact that under certain conditions the film strip itself buckles slightly under the paper backing between the idler and the takeup spool, and tends to drift from one side to the other, causing it to pile up against the flange of the spool and in some instances to override this flange. To prevent this, a film guide is assembled to the carriage at each end of the take-up spool idler.

1.2. Remove the 1/4 inch long, round head, self tapping screw (5, figure 2) from the carriage at each end of the take-up spool idler and discard.

1.3. Position the film guide (#33788) with curved end around the shoulder end of the take-up spool idler and secure with 3/8 inch long, round head, self tapping screw (#33921-P23).

NOTE: Be sure that the guide does not contact the idler and prevent it from turning freely.

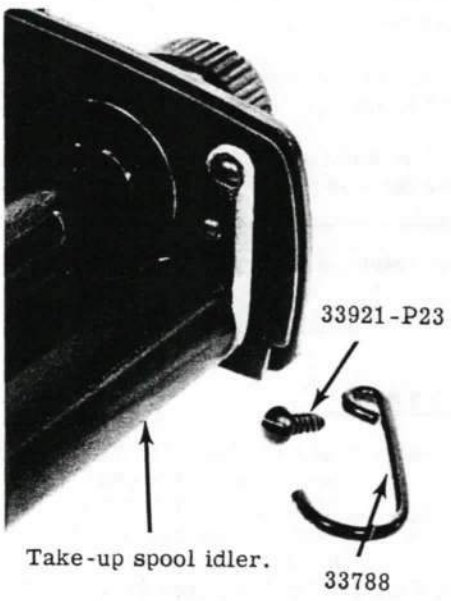

Figure A. Film Guide Assembly

2. IDLER REPLACEMENT.

NOTE: After the roll holder has been disassembled as instructed in paragraph 4 (page 4); delete contents of paragraph 6A and substitute contents of paragraph below.

2.1. Roller (32, figure 2) having 0.621 inch outside diameter and 0.125 inch diameter bearing can be used if the idler roller holes of carriage (31) are enlarged to 0.128, plus 0.001, minus 0.0005 inch diameter. Use drill press and 0.128 inch diam. (#30) drill.

2.2. Reassemble roll holder as instructed in balance of paragraph 6 of Service Manual and paragraph 1 of this Service Information Bulletin.